

Cornwell (H. G.)

A CASE OF BASEDOW'S DISEASE,

TERMINATING IN TOTAL LOSS OF SIGHT FROM [NEURO-PARALYTIC] IN-
FLAMMATION OF THE CORNEA.

BY



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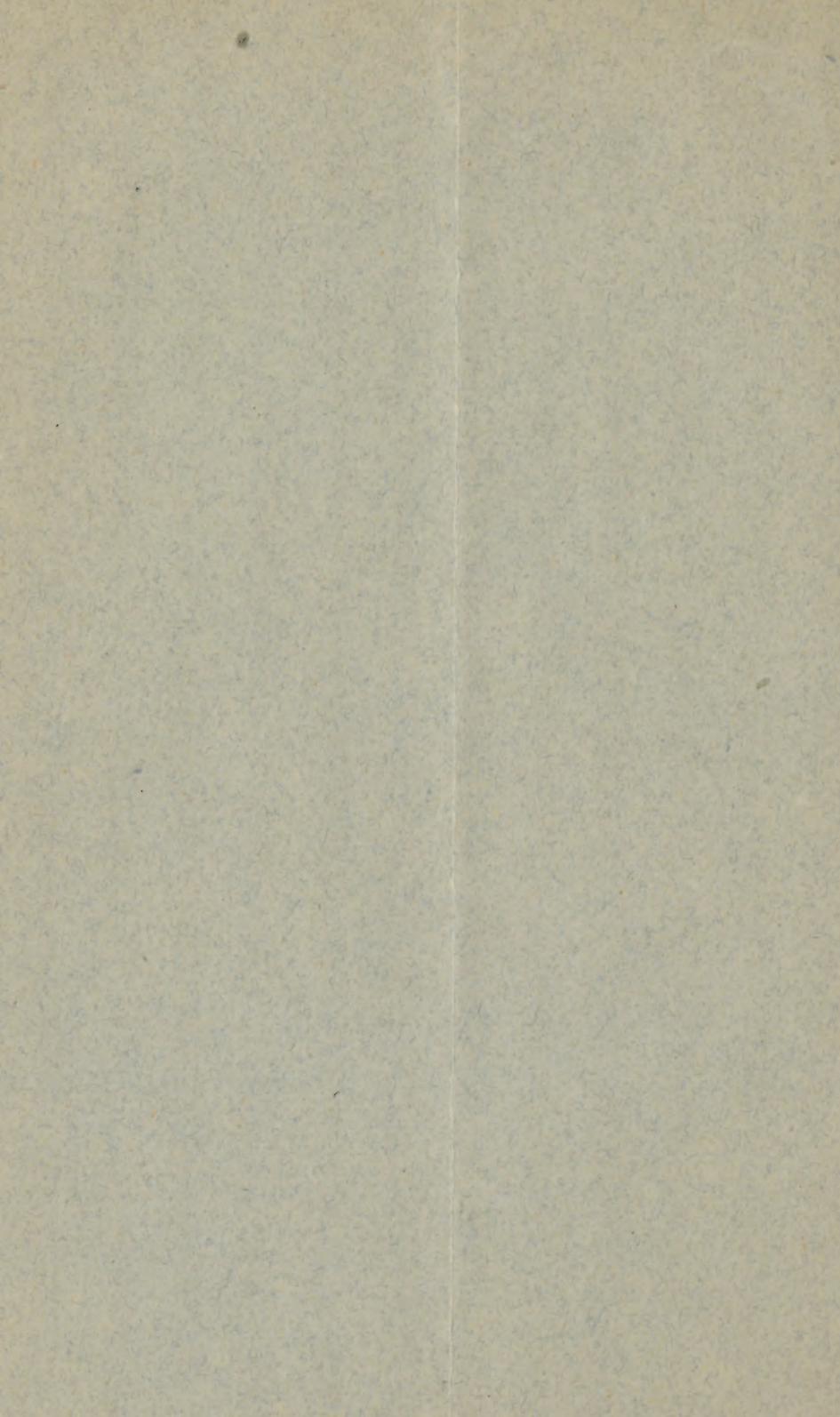


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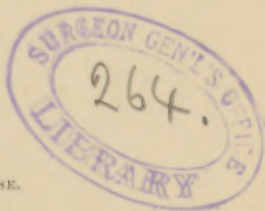
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PREFATORY NOTE.

Destruction of the globes of the eyes as a sequel of Basedow's disease is one of the rarest conditions observed in ophthalmology. I have been unable, thus far, to find any record of a parallel case to the one here reported in American medical literature. Those coming under the notice of foreign authors are referred to in the text.

I believe this case illustrates those changes which take place in the eye from paralysis of the trophic fibers of the fifth pair of cranial nerves. While the form of inflammation is noted in the title of the paper as "neuro-paralytic," this term is used in the limited sense just considered. It was not a case of neuro-paralytic destruction of the eye-ball, *i. e.* disease brought about by paralysis of all the fibers of the ciliary nerves. The elements in favor of these opinions are discussed in the paper.

If this form of eye disease be accepted as due to paralysis of the trophic nerves the case may be regarded as offering a further argument in favor of the pathological conditions, which give rise to "Basedow's disease," being seated in the glands of the cervical sympathetic.

Some additions have been made to the article in reprinting it in pamphlet form. These are enclosed in brackets, [—].

181 East State Street.

C.

A CASE OF BASEDOW'S DISEASE, TERMINATING IN
TOTAL LOSS OF SIGHT FROM [NEURO-PARALYTIC]
INFLAMMATION OF THE CORNEA.

Miss C. J., æt. 20, born in Scotland; delicate complexion, and light auburn hair; anæmic, very nervous, and with enfeebled intellect, came under the observation of one of the surgeons of the Brooklyn Eye and Ear Hospital (Dr. Arthur Mathewson, by whose kind permission I report the case), May 3, 1877. She was accompanied by a female friend from whom the following brief antecedent history of the patient, which I copy from my note-book, was obtained :

"She has always been nervous and weak minded; is easily frightened, and starts at loud and sudden noises. Her eyeballs have protruded from the orbits as long a time as can be remembered. One night about four weeks before the date of this visit to the hospital, some of her companions at a charitable institution in Brooklyn, N. Y., put something into her bed, which caused her to be badly frightened. The next morning the eyeballs were found protruding from their socket to a much greater extent than they were before. The exophthalmos continued to increase within the succeeding two weeks. Some days it was noticed that the protrusion was not so great as on others. On the first of May the left eye became inflamed, and to-day, May 3d, she appears at the hospital."

The eyeballs were found to protrude to such an extent from the orbits that the lids would not cover the corneæ at all. The cornea of the left eye was slightly cloudy over its entire surface. There was also some swelling and œdema of the ocular conjunctiva. Both of these membranes were dry and very sensitive. Vision (left eye)=ability to count fingers at 120 c. m. (4 feet); (right eye) slight chemosis, cornea clear. Vision $\frac{xx}{20}$. No ophthalmoscopic examination was made of either eye. No enlargement of the thyroid gland. Rapidity of the heart's action not observed at this time.

As local remedies vaseline was directed to be used in both eyes, together with a solution of atropiæ sulphas (.24 c. g. aqua 32 grm.), and a borax and camphor bath; she was directed to return on the following day, but she did not put in an appearance until May 6th, two days after her prescribed time, when the chemosis of the left eye was very tense. The conjunctiva was dry and scaly in appearance, and so sensitive that when it was touched with a feather the patient would cry from the severity of the pain. The lower half of the cornea was yellow and horn-like; the upper half was cloudy as before. Vision=perception of light; the cornea of the left eye was at this time markedly cloudy; the chemosis tense, and the same dry condition of the cornea and conjunctiva manifested itself as in the fellow eye. Vision=ability to count fingers at 150 c. m. (5 feet). A more careful examination of her general

condition was made at this time. Her nervous symptoms were more marked than when previously seen; she was hysterical, manifesting this condition in laughing and crying most of the time. Her circulation was 130, which became rapidly increased after the least excitement. Temperature 102° . No swelling of the thyroid gland, and no organic disease of the heart could be detected.

She was admitted into the hospital, and the continuous use of hot water and the instillation of the atropia solution (for which eserine sulph.—.06 c. g. aqua 32 grm.—was substituted later), were ordered, together with tonics of iron and quinia, egg-nogg and nutritious diet. On May 8th the entire cornea of the left eye was yellow, dry and shrivelled, and the cornea of the right eye was rapidly undergoing the same changes, and by the following morning (May 9th) the white cloud in the center of the cornea was surrounded by a dry yellow ring about 3 mm. in width. Vision=perception of light. *The globes underneath the lids were perfectly normal in appearance, not the slightest inflammation of the ocular conjunctiva existed posterior to the margins of the upper and the lower lids.*

A solution of muriate of quinia was substituted for the eserine. The use of the vaseline was continued, and an oiled-silk mask ordered to be worn, which gave her so much relief from the pain which the exposure of the eyes to the air occasioned that she cried when it was removed for any length of time. Fluid extract of ergot was substituted for the tinct. valerian and Hoffmann's anodyne. The ergot (Squibb's) was given in 4 grm. doses every two hours, which had the effect of reducing the cardiac pulsations from 130 to less than 100 a minute. The temperature fell from 102° to 100° . Whenever the use of the drug was omitted the temperature again rose to its original height (102°) with corresponding increase in the rapidity of the heart's action. Glycerite of starch was tried as a local remedy, but the vaseline was found to be better. On the following day the cornea of the left eye was dry and yellow. Same treatment continued. Two days later (May 12th) the appearance of the patient at this time was frightful. The lids of both eyes were forced widely apart by the protruding eyeballs. The lower ones twitched with great rapidity most of the time. The ocular conjunctiva of both eyes was dry and scaly; the chemosis was so great that an abrupt dark-colored mound was formed around the cornea, overlapping its edge to quite a marked extent. She was very irritable. Her face and neck were red from the congested state of the vessels, [the pulsations of the carotids was noticable at a distance of some feet,] and she perspired profusely most of the time.

One week later she was discharged. The globes were now [noticeably shrunken and] softened. The lids could be closed to such an extent that but a narrow space intervened between their edges; the intra-ocular tension was much lowered ($T=-2$). Her nervous irritability had by this time chiefly subsided. Circulation 130, temperature 101° .

Blindness from disease of the cornea as a sequel of Basedow's disease is a very rare occurrence. Most authorities in ophthalmology make but a passing reference to the few cases that have been re-

ported, and regard the opinion advanced by Von Graefe, viz., that the diseased condition of the cornea is brought about by a paralysis of the "trophic" fibres of the ophthalmic division of the trifacial nerve as (with our present knowledge, which it must be confessed is yet vague of the nervous agency governing the nutrition of the eye,) most worthy of acceptance. Soelberg Wells, in his "Treatise on the Eye," records but a single instance of blindness occurring in this disease coming under his observation, the patient being a young woman. Graefe, according to the same author, records fourteen cases, ten men and four women, in the *Berliner Klin. Wochenschr.*, 1867. VonDusch gives in his *Lehrb. d. Herzkhtn.*, Leipzig, 1868, an analysis of fifty-six cases of the disease coming under his observation, *in all of which there was diminution of the normal sensibility of the cornea only.*

The experiments of Meissner (*Henle and Pfeuffer's Zeitschrift*, xxix.), and subsequently those of Schiff (*log. cit.*) on rabbits have obtained as a result the belief that certain (the innermost) "trophic" fibres enter into the structure of the fifth nerve. On these experiments the opinion has been based (O. Wyss, Valentine, and others) that on account of the division of these (innermost) fibres the eye is less able to resist those changes which are brought about by its exposure to external irritants, the air, dust, etc., after complete division of the nerve by which the sensibility of the organ is lost. Graefe, after these experiments, believed that disease of the cornea as a sequel of Basedow's disease was due to paralysis of these "trophic" fibres of the ophthalmic branch of the trifacial nerve. The character of the destructive changes which take place in the cornea are described by Eulenberg in a paragraph which I reproduce from a paper on Basedow's disease under the head of "Vaso-Motor Neuroses" in Ziemssen's *Cyclopaedia*, vol. xiv. p. 88:—

"Another and a rarer group of symptoms must, perhaps, be regarded in some cases as secondary, as a sequel of the exophthalmos and the defective power to depress the upper lids. These symptoms are *disturbances of the nutrition of the bulb*, especially in the outer coats of the eye, the conjunctiva and cornea. The impairment of the power of moving the lids prevents the eye from receiving its due share of moisture, whence comes dryness in the conjunctival sac, distension of the conjunctival veins and conjunctivitis. The lachrymal secretion is often increased. In the majority of cases nothing worse occurs; but in bad cases severe disturbance of nutrition of the cornea occurs, closely resembling what occurs in neuroparalytic ophthalmia, and perhaps explicable in the same way. The cornea first loses its sensibility; on its surface dry yellow spots appear, which gradually enlarge, and the final result is the formation of an eschar, followed by diffuse desiccation or even perforation. In other cases infiltrations occur at several points of the cornea at once, and ulceration or even perforation occurs. It is remarkable that these disturbances in the nutrition of the globe are common in men (Basedow, Prael, Nauman, Von Graefe), although in a few instances also observed in women (Lawrence, Tatum, Teissier)."

[Here the author regards the most important factor in the etiology of these disturbances in the nutrition of the cornea to be the want of protection of this membrane, together with the dryness occasioned by the exophthalmos. These, it seems to me from my

study of this case,* are to be regarded as secondary factors only. This I will endeavor to show before I conclude the paper.]

It will be observed that the patient, whose history I have recorded, suffered very much from the sensitive condition of the eyes. She cried when they were exposed to the air for any length of time, or when they were touched with a feather. The inflammation was not of a violent character, but a drying or shrivelling up of these membranes—an acute xerosis—[in the treatment of which the constant application of vaseline, glycerite of starch, hot fomentations, etc., was absolutely without good effect.] There was no loss of corneal tissue. In this particular it will be noticed that it differs from that form of inflammation of the eye which ordinarily follows its exposure to external irritants, as after facial paralysis with consequent drooping of the lower lid, or retraction of one or both lids from cicatrices the result of burns, or from exophthalmos due to tumors or aneurisms of the orbit. In these latter instances acute keratitis is developed with photophobia and profuse lachrymation, followed by sloughing of cornea oftentimes, or dense pannus.* Here the corneæ were dry and yellow; no loss of tissue was perceptible, and no sloughing. The membranes (the corneæ) were at first white, resembling ground glass, becoming subsequently dry and yellow. There was no anæsthesia of the eyeballs due to stretching of the ciliary nerves, and no paralysis of the extra-ocular muscles. No mention is made in my notes of the case of dilatation of the pupil, or loss of accommodation in the right eye before it became affected by the disease. If such changes were present, they would have been observed doubtless, and recorded, and yet the globes protruded from between the lids to such an extent as to be (in profile view) half way out of the orbits. *Posterior to the margins of the lids the globes were perfectly healthy in apperance, not the slightest congestion of the ocular conjunctiva was present so long as the case was under observation.* The ocular conjunctiva was chemotic and œdematous, the latter condition to a slight extent at the margins of the lids. Lachrymation was but slight; flakes of mucous adhering to the convexity of the swelling. [The globes finally became very soft. Tension—2.]

We read at times of instances where after paralysis of the fifth nerve the cornea became affected, although the eye was protected

* [A case of neuro-paralytic ophthalmia has come under my observation since the first appearance of this paper in which the cornea of the affected eye underwent precisely the same changes as were exhibited in the right eye of this patient. I had operated on the patient for the removal of a multilocular cyst of the orbit. The resulting inflammation caused such swelling of the orbital structures that the pressure interfered with the vitality of the ciliary nerves and necrosis of the cornea was the result. The history of this case will appear in a future article.]

by the falling of the upper lid (associated ptosis).¹ This is contrary to what usually occurs, as the experiments of Magendie and other vivisectionists, together with our subsequent clinical experience, have taught us. In rare cases we find no disease of the cornea, although this membrane was wholly insensitive from paralysis of the fifth nerve, and unprotected.

We must look for the cause of the corneal disease in the case I report in these two directions, viz.: (1) It was due simply to the exposure of the eyeballs to the air, and wholly disassociated from an affection of the fifth nerve or the ganglion of Gasser; or (2) The "trophic" fibres of the nerve were *alone* affected, and on this account the eye was unable to resist the injurious influences of the air, dust, etc.

The obviously neurotic character of the disease in this patient to my mind is worthy of consideration in offering a theory as to the cause of the destructive changes in the cornea. The reader will note these points by turning to the history of the case. The patient always nervous, starting at loud and sudden noises; her feeble intellectual powers; the *brusque* development of the exophthalmos after a fright at a comparatively trivial circumstance, together with her subsequent irritable and hysterical condition. The character of the destructive process which took place in this case is not what we would naturally expect to follow exposure of the eye to irritants alone. [As the case progressed the globes became very soft. (T.-2.) I regard this fact as one of some importance. Irido-choroiditis and suppurative choroiditis (panophthalmitis) reduce the eye tension. The former condition does not occur, however, in the progress of a form of inflammation which brings about necrosis of the cornea. Here one would expect in turn suppurative iritis, cyclitis and choroiditis going on to general destruction of the globe (or panophthalmitis,)—a violent inflammation, attended with swelling of the lids, severe circumorbital pain, marked constitutional disturbance, etc. Although the chemosis was marked in this case it was in part due to œdema, while underneath the lids there was no injection of the vessels of the conjunctiva overlying the sclera.

Basing my opinion on these facts I believe the disease to have been one affecting the gasserian ganglion resulting in protrusion and nutritive changes in the eyeballs.] Is it unreasonable to suppose that the primary exophthalmos was of neurotic origin, and that the protrusion of the eye-balls developed itself to a much greater extent after this fright from further changes taking place

¹ *Vide* Paralysis of the Trigemini, followed by Sloughing of the Cornea, by William F. Norris, M. D.; Amer. Journ. Med. Sci., Jan., 1872, p. 80.

in the ganglion of Gasser (in this case the elements of the sympathetic perhaps being only affected) or in the fibres of the sympathetic nerve which are distributed to the eye, the "trophic" fibres of the fifth pair of nerves, as they are generally believed to be? The greater number (eight out of twelve) of the necropsies made in which changes were found in the cervical sympathetic [glands] forms a basis for such a theory.¹ Eulenburg suggest (*loc. cit.*, p. 98.) that it is not impossible that this condition—[necrosis of the cornea]—should result from disturbances of innervation on the part of those sympathetic fibres which enter into the structure of the ophthalmic division of the fifth nerve. Stretching of the ciliary nerves had manifestly nothing to with it, as the corneæ were sensitive, and morbidly so, as long as the patient was under observation. In Emmert's (twenty) cases the reader will observe that the sensibility of the cornea and conjunctiva was much lowered. This, according to authorities, is not the rule but the exception. I regret that the menstrual function of the patient was not made the subject of careful investigation. If I remember rightly, she stated there was suppression of the menstrual flow, but I did not record it at the time; she had a markedly chlorotic appearance, which improved under the tonic course followed during her stay in the hospital.

The case presented one other feature of interest, and that was the absence of enlargement of the thyroid gland. This was observed by Von Dusch in three of fifty-six cases.²

¹ Observed by Trousseau, Reith, Cruise, McDoneal, Traube, Biermier, Virchow and Geigle; not recognized by Recklinghausen, Paul, Fournier and Olliver.

² Accelerated action of heart, absent in 3 cases.

Goitre 3 "

Exophthalmos 4 "

In the order of their development—Lehrb., d. Herzhtn., 1868.

